

# August 13, 2015 Severe Storms & Flooding

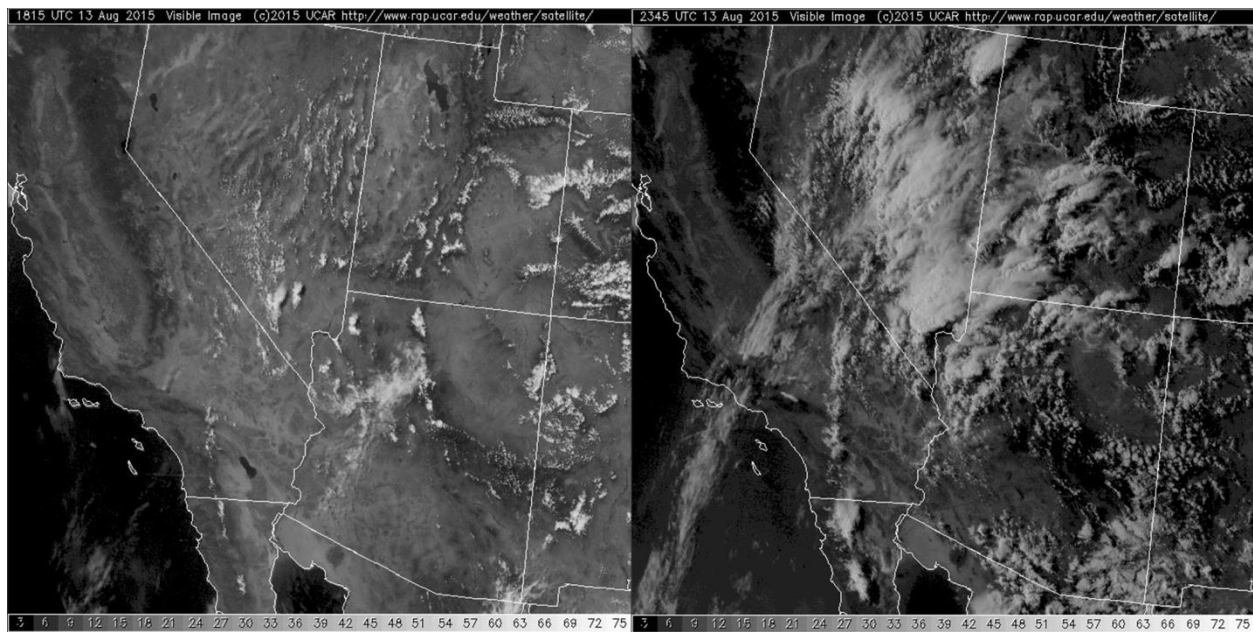
Prepared by Justin Pullin



Downed power-poles in Henderson after severe storms moved through. Photo courtesy of Fox 5 News.

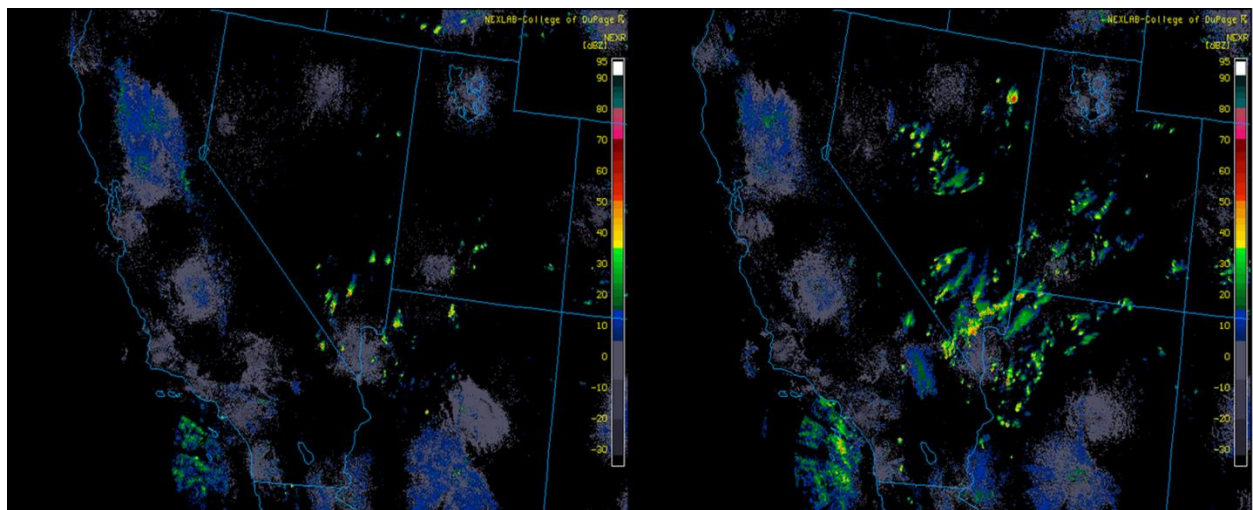
## Introduction/ Setup

Abundant monsoon moisture, daytime heating, and terrain all worked in sync to set the stage for an active day across the eastern half of the Las Vegas Valley. A ridge of high pressure south and east of Las Vegas strengthened and eased westward during the overnight hours of the 12<sup>th</sup>, bringing in an influx of mid-level moisture. This feature also pushed dry air that suppressed thunderstorms across the area on the 12<sup>th</sup> northward away from the region. With all of the ingredients in place, thunderstorms developed over mountainous terrain across southern Nevada and northwestern Arizona and moved into valley locations during the afternoon hours, producing damaging winds and flash flooding in their wake.



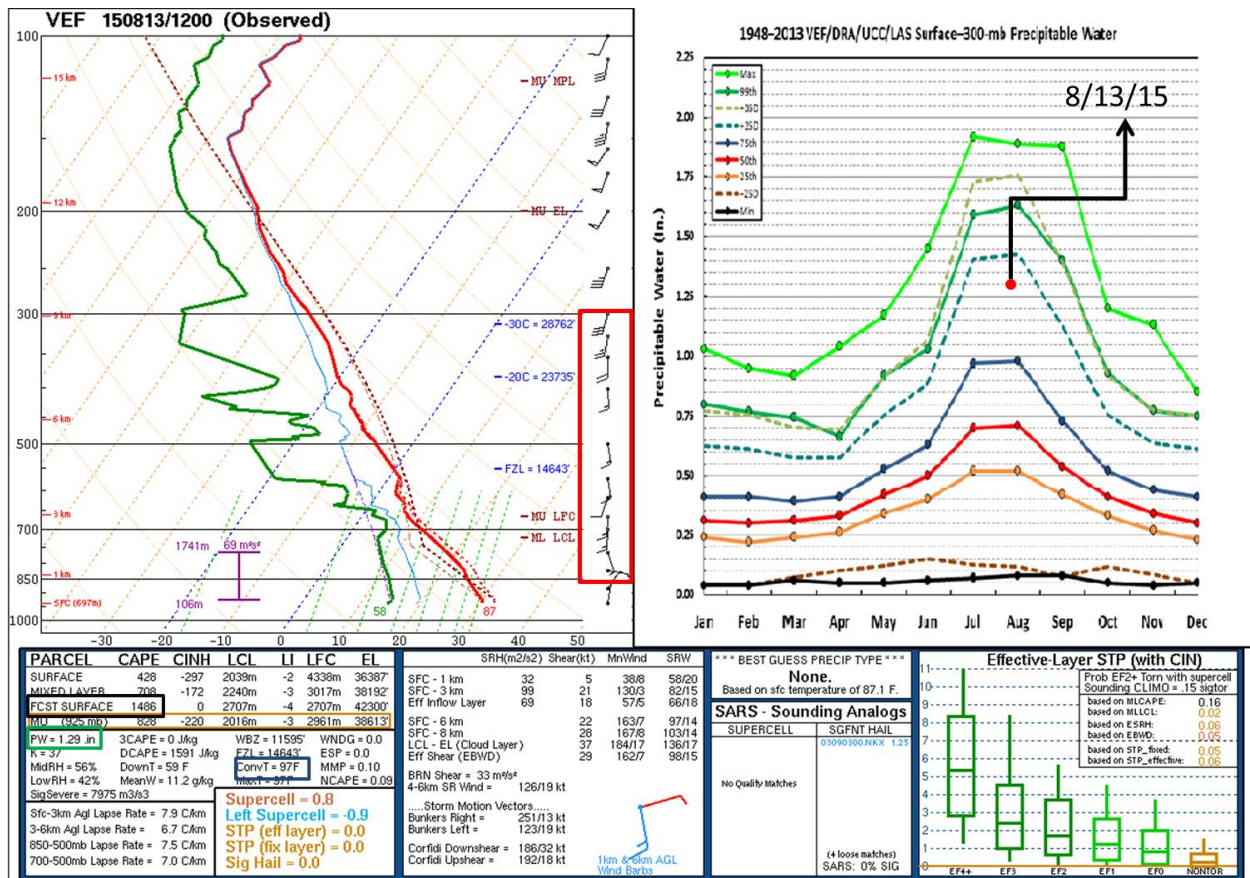
**Left image:** Visible satellite shows thunderstorm development over the mountains in southern Nevada and across Arizona and Utah just after 11 am. **Right image:** Shows the evolution of these thunderstorms over the course of 5 hours, as storms were moving over the Las Vegas Valley.

Here is what radar looked like across the region compared to the satellite images.



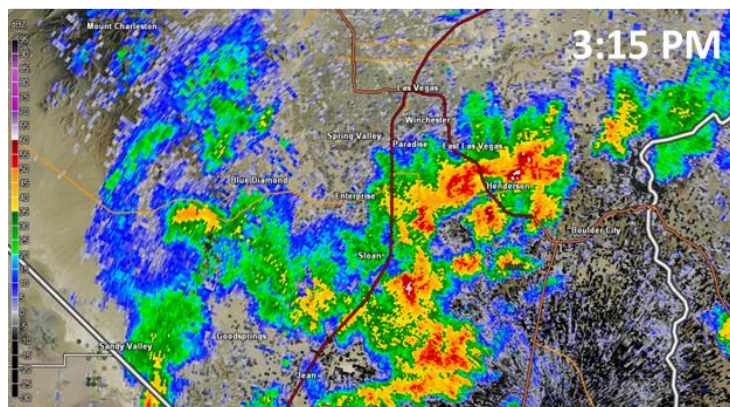
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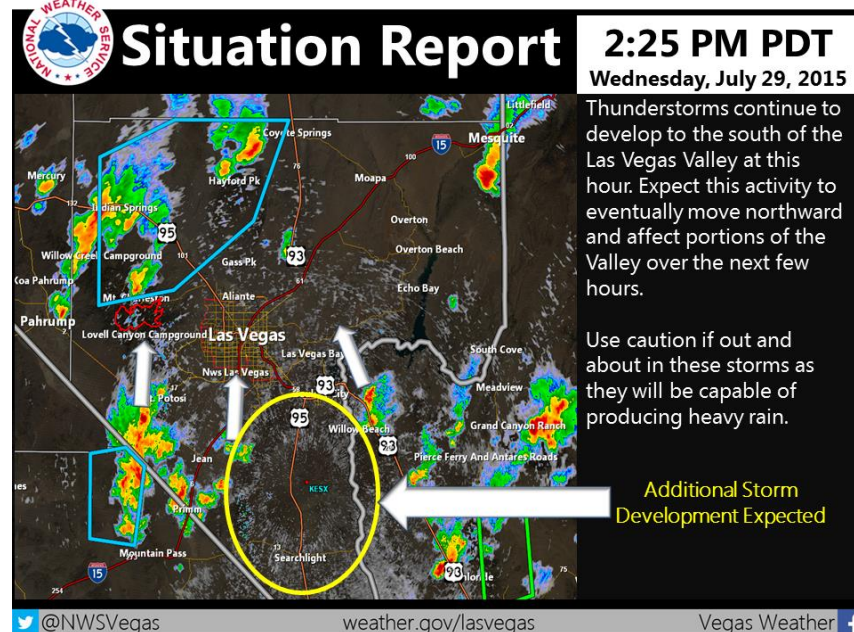
The 12Z (5am) Las Vegas sounding showed ample moisture for thunderstorms in the area, denoted by precipitable water values of 1.29 inches (green box). Typically values of 1 inch or more is significant for this time of year. Forecast instability values (black box) were enough to support thunderstorm development by the afternoon. Since daytime heating was the big driving force behind development on this day, the "convective temperature" (blue box) is the threshold at which thunderstorms will begin to develop. This threshold was exceeded in the Las Vegas Valley, with temperatures rising into the low 100's by early afternoon.

## A Closer Look: Henderson Storms

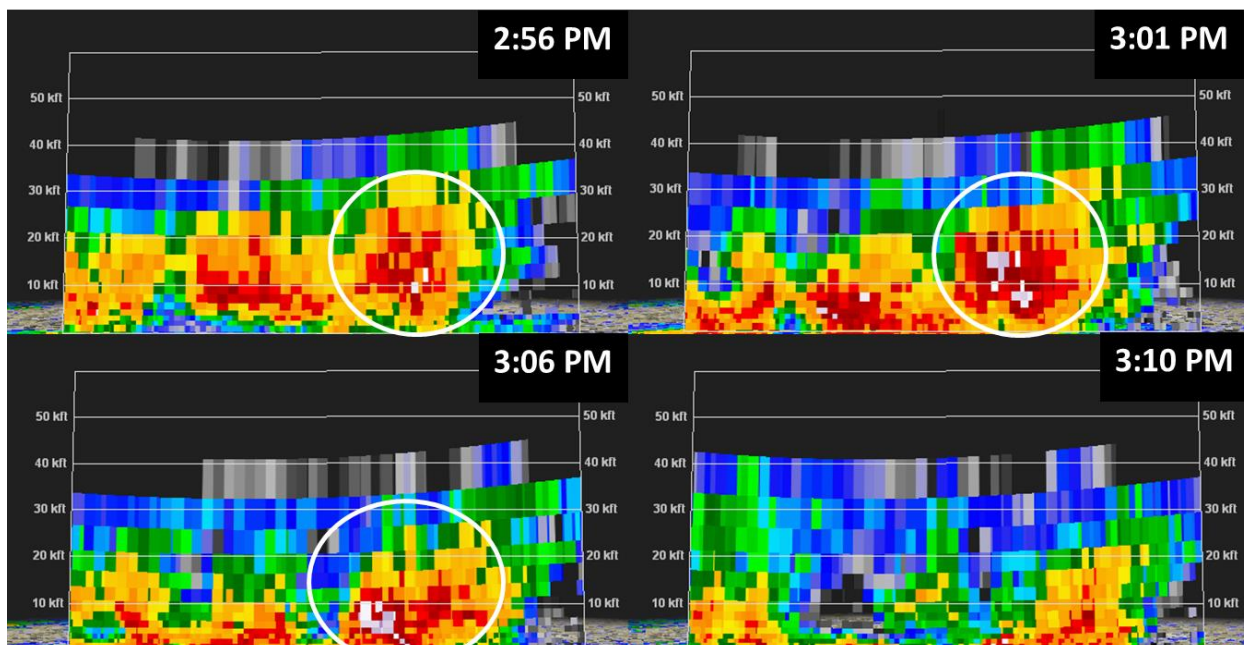


One of the strongest and most dynamic storms of the day impacted the Henderson area yielding flash flooding as well as numerous wind damage reports.

Thunderstorms in northwestern Arizona began to produce outflow boundaries that moved toward the McCullough Range, south of the Las Vegas Valley. These small scale boundaries coupled with unstable air and terrain often initiate further thunderstorm development. Northward steering flow favored storms moving off of the range into the valley.

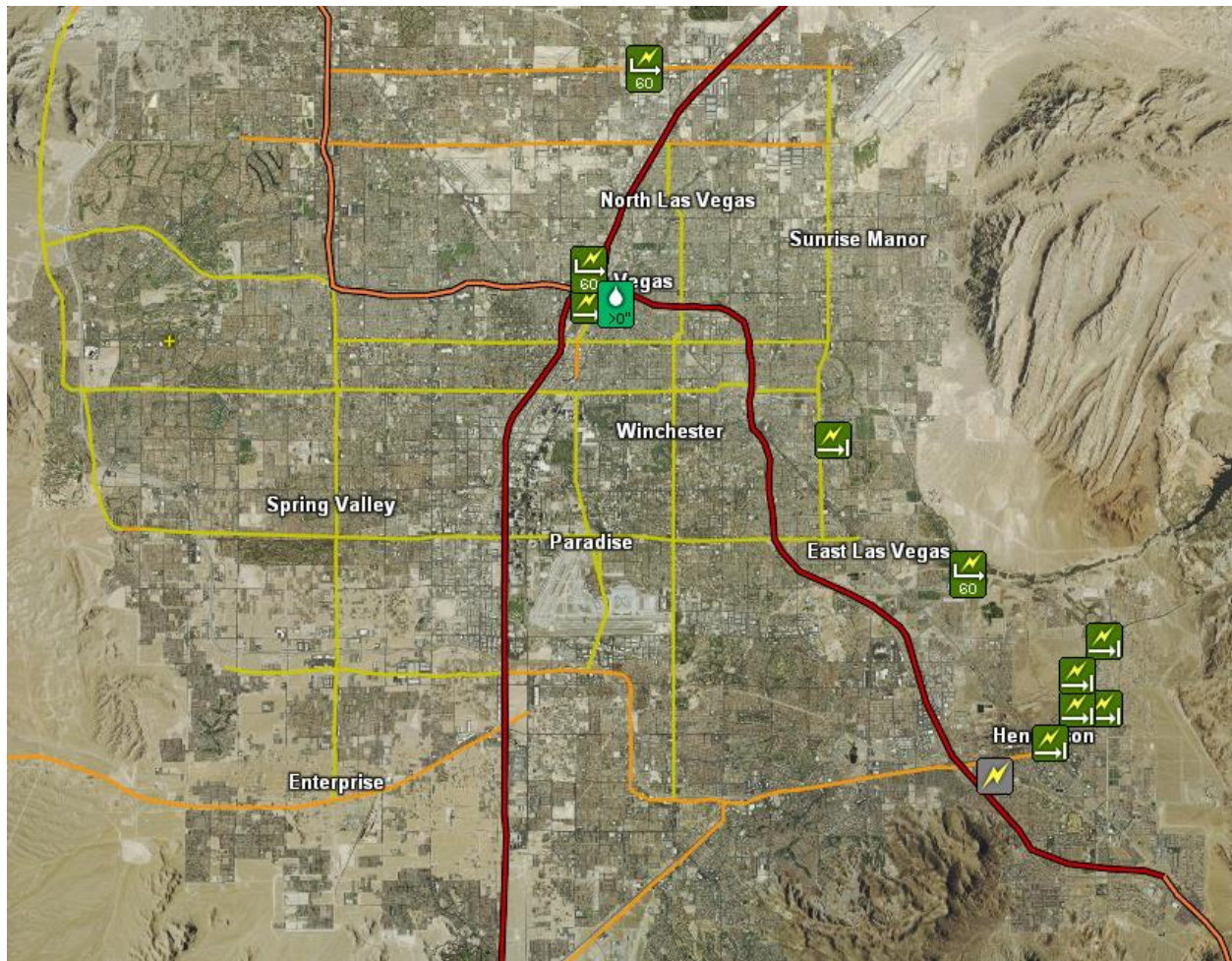


Situation report highlighting favored areas of thunderstorm development and expected movement into the valley.



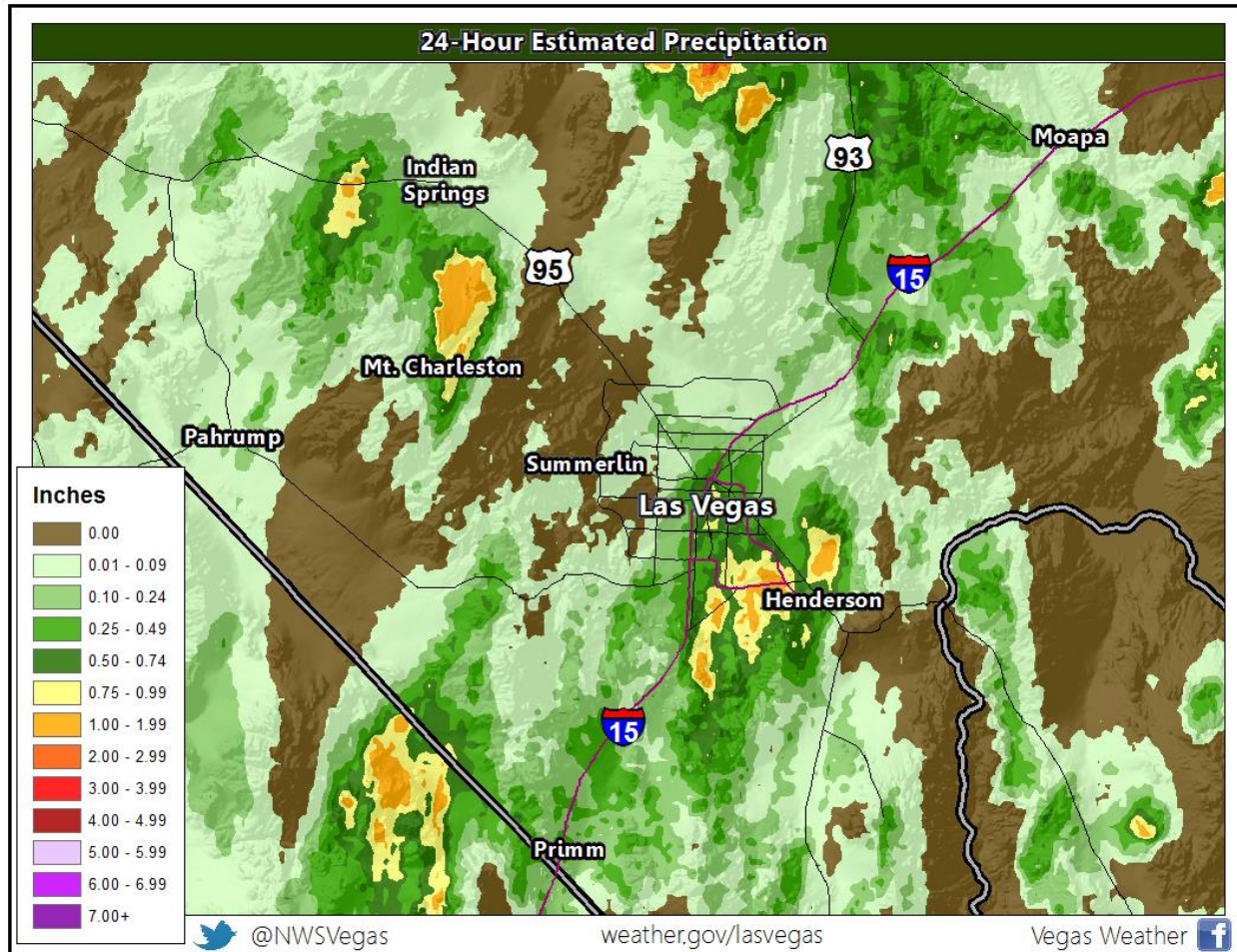
Cross section analysis of the Henderson storm show a suspended core of heavy rain that descended to the surface over the course of 15-20 minutes. As this core decreased through the storm to the surface, it gained momentum leading to the microburst which caused wind gusts to 60 mph and damage in the Henderson area. Damage reports began coming into the office around 3:15 PM.





Overview of the damage reports and wind gusts observed with thunderstorms that affected the eastern valley.

Numerous thunderstorms developing over the McCullough range continued to move over Henderson and east Las Vegas, bringing several rounds of very heavy rainfall, leading to flash flooding of main and secondary routes in the area. Generally, rainfall amounts ranged from 1-2 inches across southeastern portions of the valley.



Dual-pol radar rainfall estimations across the Las Vegas Valley and surrounding areas. Note the areas of 1-2 inches of rain in the southeast Valley. Rain gauge totals generally ranged from 1.25 to 1.75 inches in these areas.

## Impacts

**Travel:** Flash flooding and weather related roadway impacts were observed in several areas across southern Nevada and northwestern Arizona including:

*\*U.S. 95 west of Indian Springs:* Rapidly flowing water alongside the roadway washed mud and debris onto the roadway between mile markers 125-127.

*\*Henderson/Green Valley:* Flash flooding impacted and closed many side streets and several main routes for a period of time, including Horizon Ridge Parkway where significant debris was reported in spots. Several swift water rescues occurred throughout eastern portions of the valley. Power outages in the area caused delays as well.

*\*I-215 Westbound (Henderson):* A truck crash and associated fuel leak due to wet roads closed all westbound lanes between Pecos/St. Rose Parkway and Eastern Avenue.

*\*Las Vegas Valley:* Major delays occurred on most main routes throughout the valley Thursday afternoon.



**\*DW Ranch Road:** Road was closed by Mohave County. Water was reported flowing across several low water crossings due to excessive rain in the area. Large boulders washed onto the road due to water flows.

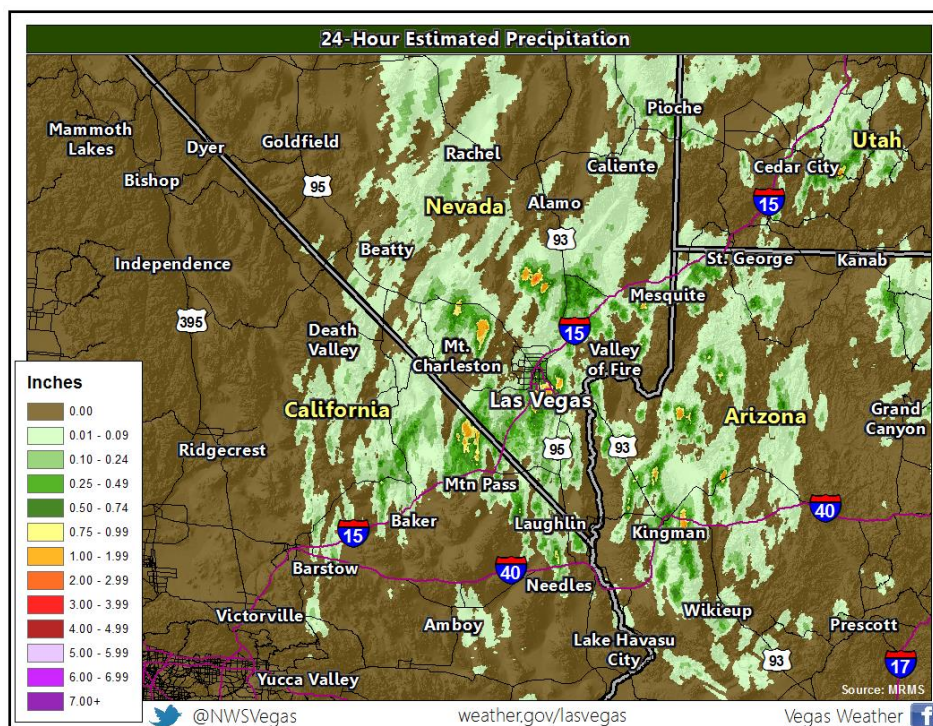
**\*Highway 322 (Lincoln County):** Flash flooding and associated debris was reported across the road between mile markers four and nine.

**Aviation:** Thunderstorms over the area caused a ground stop at McCarran International Airport that lasted 2 hours and 15 minutes, delaying many inbound and outbound flights. Several planes were forced into a holding pattern as thunderstorms moved over the airport. Aviation impacts spread across the Southwest long after thunderstorms dissipated, with delays and cancellations of inbound flights from other airports across the region through the evening.

**Wind Damage:** There were numerous reports of wind damage in the Henderson and eastern Las Vegas area associated with the thunderstorms. These reports ranged from large trees blown over, metal awnings and billboards destroyed as well as nearly 30 power poles snapped or blown over.

**Lightning:** Las Vegas Fire and Rescue spokesperson reported 6 tree fires were started as a result of lightning across the valley. No homes were burned as a result and no injuries were reported.

**Power Outages:** NV Energy reported more than 10,000 power outages on Thursday afternoon and evening, with nearly 2,500 remaining without power into Friday. Shelter/cooling stations were opened by the City of Henderson and the American Red Cross for residents affected.



Overview of dual-pol radar rainfall estimations across the region. Radar estimations and rain gauge totals were particularly close through the entirety of the event.

## Photos

The following photos were gathered from social media. Thanks to our followers for the pictures and information!



**Left:** Car stranded in flood waters on Mohave & Hebard. **Right:** Delays along 215 near Valley View due to a crash.



Several 737s wait out delays at McCarran International Airport.





Car stranded in flood waters on Horizon Ridge near Stephanie and Gibson.



Leftover rocks and mud from floodwaters line on of the lanes on Horizon Ridge near Stephanie.